

# **AFTER ACTION REPORT:**

## **WASTE MANAGEMENT AREA 15 – SITE INVESTIGATION AND REMOVAL ACTION**

**PLUM ISLAND ANIMAL DISEASE CENTER  
SUFFOLK COUNTY, NEW YORK**

Contract No. 53-3K06-4-0300

**Prepared for:**

**U.S. Department of Homeland Security  
Science and Technology Directorate  
Office of Research and Development  
Plum Island Animal Disease Center  
Plum Island, New York**

**Prepared by:**

**BMT Entech, Inc.  
13755 Sunrise Valley Drive, Suite 320  
Herndon, Virginia**

**August 2007**



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## LIST OF ACRONYMS AND ABBREVIATIONS

ARS	Agricultural Research Service
Entech	BMT Entech, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDX	4-4' DDT; 4-4' DDD; 4-4' DDE
DHS	Department of Homeland Security
NFA	No Further Action
NYSDEC	New York State Department of Environmental Conservation
OC	Organochlorine
PAH	Polynuclear Aromatic Hydrocarbons
PA/SI	Preliminary Assessment/Site Inspection
PIADC	Plum Island Animal Disease Center
PID	Photo Ionization Detector
PP	Priority Pollutant
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
SCDHS	Suffolk County Department of Health Services
SVOC	Semi-volatile Organic Constituents
TAGM	Technical and Administrative Guidance Memorandum #4046
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
USDA	United States Department of Agriculture
VOC	Volatile Organic Compounds

## 1. INTRODUCTION

This After Action Report (Report) has been produced by BMT Entech, Incorporated (Entech) in partial fulfillment of the requirements of Contract No. 53-3K06-4-0300. This Report documents investigative and remedial initiatives at Waste Management Area 15 at the Plum Island Animal Disease Center (PIADC), and is submitted to the United States Department of Homeland Security (DHS), the present-day owner/operator of that facility. PIADC is located, as shown in Figure 1, at the far eastern end of Long Island, in Suffolk County, New York.

The referenced contract, which was initially developed by the United States Department of Agriculture - Agricultural Research Service (USDA-ARS), addresses investigatory and removal actions at several former disposal sites located on Plum Island. These sites, which are designated as Waste Management Areas (WMAs), were used to dispose of a variety of general refuse and research wastes generated by USDA-ARS. USDA-ARS owned and operated PIADC from 1954 to 2003; historical records show that PIADC actively disposed wastes on-site during most of that period (mid-1950s to the early 1990s). Initial investigations into past waste treatment, storage, and disposal practices at the facility were conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Although the investigatory findings indicated that PIADC was ultimately not subject to further CERCLA ("Superfund") authority, follow-on investigation and removal actions initiated by PIADC continue to be managed under the facility's so-called "CERCLA Program". This Program is administered through the contract vehicle referenced above.

As shown in Figure 2, WMA 15 is situated along the north-central coast of the island, adjacent to Long Island Sound. The site (landfill) has long been used for fill/waste disposal operations. When viewed from an aerial or "map" perspective, the site has a fan-shaped appearance that extends onto the rocky northern coastline of the island. The crescent-shaped, coastal bluff of the landfill has long been studded with scrap metal and other debris deposits. Much of this discarded material has emerged from the bluff over time due to the erosional effects of the wind and sea.

Very few records or references to the genesis of this WMA were uncovered during initial 1999 CERCLA "desktop" file reviews. Historical aerial photography and old maps of the island indicated that the United States Army, the owner/operator of Plum Island prior to USDA-ARS's tenure, used this location as a port facility. Fill/debris deposition activity in this localized area may have served to enhance the "landing" portion of this port. Aerial photographs dating from the late 1930s show the fan-shaped perimeter of the WMA to be in existence well before PIADC's dedication in the mid-1950s. Subsequent on-site examinations of this site suggest that waste deposits likely represent a mix of both Army and USDA-ARS activities during the past century.



Figure 1:  
Plum Island Animal Disease Center  
Location Map



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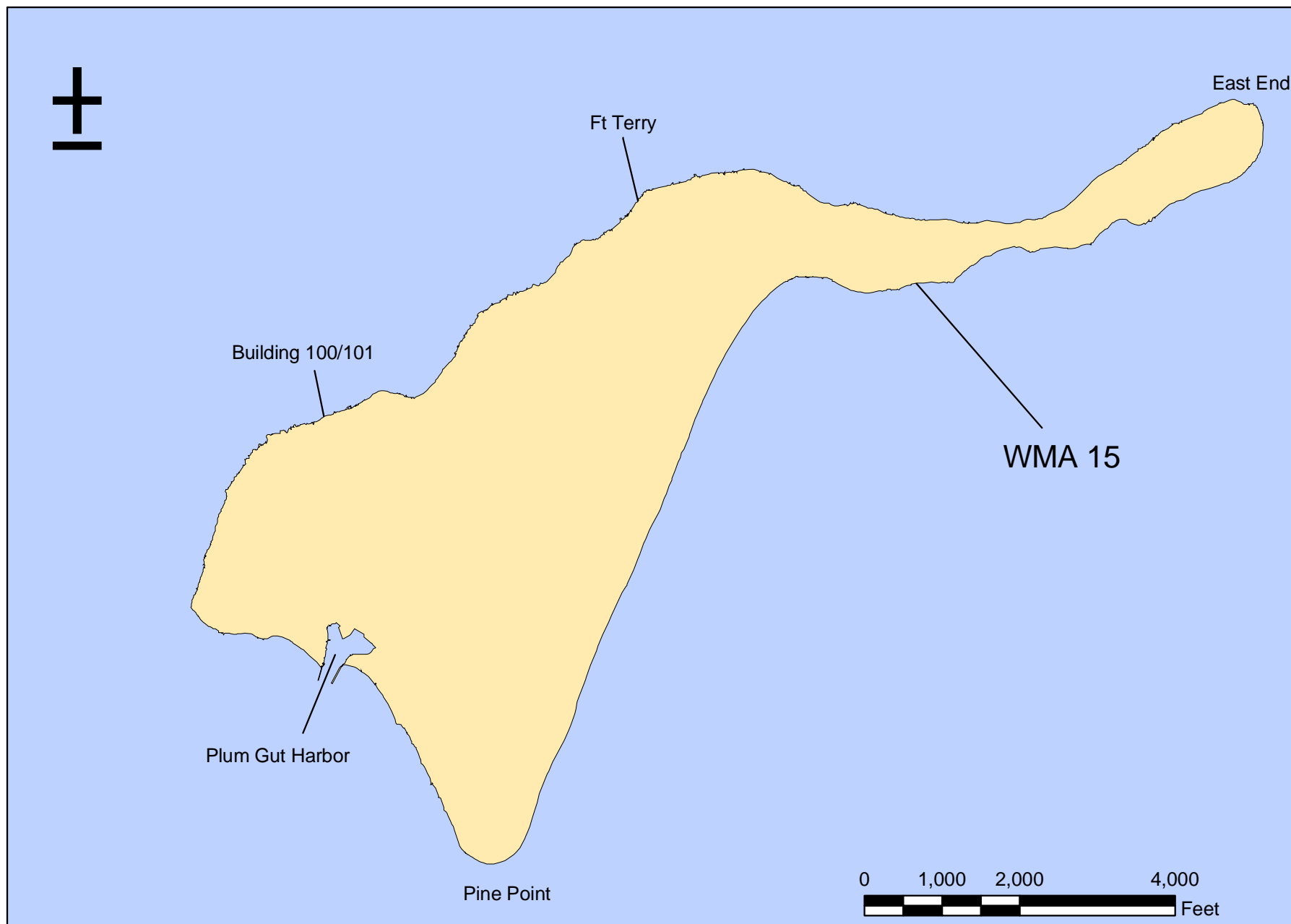


Figure 2:  
Plum Island Animal Disease Center  
WMA15 Location Map



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The WMA 15 landfill was initially identified and named in 1996 by a consulting firm hired by USDA-ARS to conduct a CERCLA Preliminary Assessment/Site Inspection (PA/SI) for Plum Island. The site was more thoroughly investigated by Entech in 1999 during follow-on CERCLA SI activities. The extensive media sampling (e.g., surface, subsurface, groundwater) and observational test pitting operations conducted during the 1999 SI supplemented existing information regarding the nature and extent of the environmental conditions at this site. The resulting analytical and observational data gathered during the investigation was set forth, in detail, in a formal, SI-styled site characterization report titled: CERCLA Program Report for Plum Island Animal Disease Center, September 2002.

## **2. BASIS FOR FURTHER ACTIONS AT WMA 15**

The preliminary findings and recommendations of the 1999 SI investigation were initially presented in a draft report which was reviewed and discussed, in detail, during a meeting on May 8<sup>th</sup>, 2001 between the USDA-ARS and the New York State Department of Environmental Conservation (NYSDEC) and the Suffolk County Department of Health Services (SCDHS). State and County regulatory authorities provided specific input and recommendations for future removal/remedial actions at a number of the individual WMAs addressed during this “Next Steps” meeting. These recommendations were accepted by USDA-ARS and subsequently incorporated into the above mentioned September 2002 report (hereinafter referred to as the CERCLA Program Report) prior to its publication. WMA 15 was one of a handful of sites where further investigations were required before a No Further Action (NFA) determination would be considered and/or granted by the regulatory community. Details regarding the “Next Steps” meeting’s action items are presented in the CERCLA Program Report. A brief overview of the 1999 investigatory findings that led to the request for these further actions is presented in the subsections below.

### Drum Carcass Investigation

Test pitting (trenching) undertaken by Entech in 1999 in the eastern portion of the landfill led to the discovery of discarded drum bodies (“carcasses”) in near surface soils. Specifically, carcasses were identified in Trench “h” of that investigation. Figure 3 provides a schematic of the sampling points and positions of investigatory trenches created in 1999.

The exploratory action at Trench “h” resulted in the recovery of 3 drum carcasses. The carcasses and their residual contents were containerized for later off-site transport and disposal. Other carcasses were observed in the side walls of the exploratory trench, but were not recovered at that time. These carcasses were left in place, as it was explained to the 2001 regulatory meeting attendees, because of the nature of the investigation then underway. The purpose of the trenching was to determine general site conditions



**Figure 3**  
**Plum Island Animal Disease Center**  
**WMA 15 Sampling Plan (1999)**

### Legend

- # Soil Boring Point
- ( Soil Boring and Groundwater Point
- - - Test Pit (trench)



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and the extent of historical disposal practices at WMA 15; it was not intended (or funded at that time) as a removal action. Trench "h" was subsequently backfilled and observations regarding its contents were documented in the CERCLA Program Report.

#### Further Site Characterization Activities

During the 1999 investigation of WMA 15, only two test pit trenches were developed to characterize the contents of the landfill. One trench (Trench "h") yielded the evidence of drum disposal discussed above. The other trench (Trench "g") was begun, but quickly encountered obstacles (e.g., water line, asphalt pavement) that led the inspection team to abandon further characterization efforts. The findings of this curtailed exploratory action, as well as the circumstances attributing to its abandonment, were documented in the presentation provided for regulatory review. This presentation did not include a proposal to develop an alternate test pit trench for this portion of the site.

### **3. SUMMARY OF REMOVAL AND INVESTIGATORY ACTIONS**

Direction provided by the regulatory community during the May 8<sup>th</sup>, 2001 "Next Steps" meeting set forth requirements for two (2) further actions at WMA 15. The first action requirement addressed the drum carcasses in the one test pit noted above. NYSDEC and SCDHS requested PIADC to further delineate the spatial extent of the drum carcasses observed in Trench "h" and recover all drum remains that might be encountered in this deposit. The second further action requirement directed PIADC to conduct further invasive investigations within WMA 15. Due to the limited success of Trench "g" in 1999, regulatory representatives felt that the central portion of the landfill had been inadequately characterized. In an effort to correct this deficiency, PIADC was asked to revisit this portion of the site by conducting further exploratory actions.

Both of the further action requirements cited above were initially addressed in October 2005. In addition to these directed actions, DHS, which had come into possession of Plum Island in June 2003, also resolved to undertake a general clean-up of WMA 15. Specifically, the large deposits of scrap metal and miscellaneous debris along the shoreline bluff of the landfill were an obvious eyesore readily visible to the public from near-shore waters. The continued presence of this environmental insult was felt to reflect poorly on PIADC's overall stewardship of the island. As such, DHS incorporated this supplemental action into the follow-on investigation and removal activities mandated by the regulators.

A brief review of the activities associated with each of the three (3) primary actions discussed above is presented in the balance of this Section's discussion. This presentation is meant to formally document the actions taken to successfully satisfy the three (3) individual task requirements.

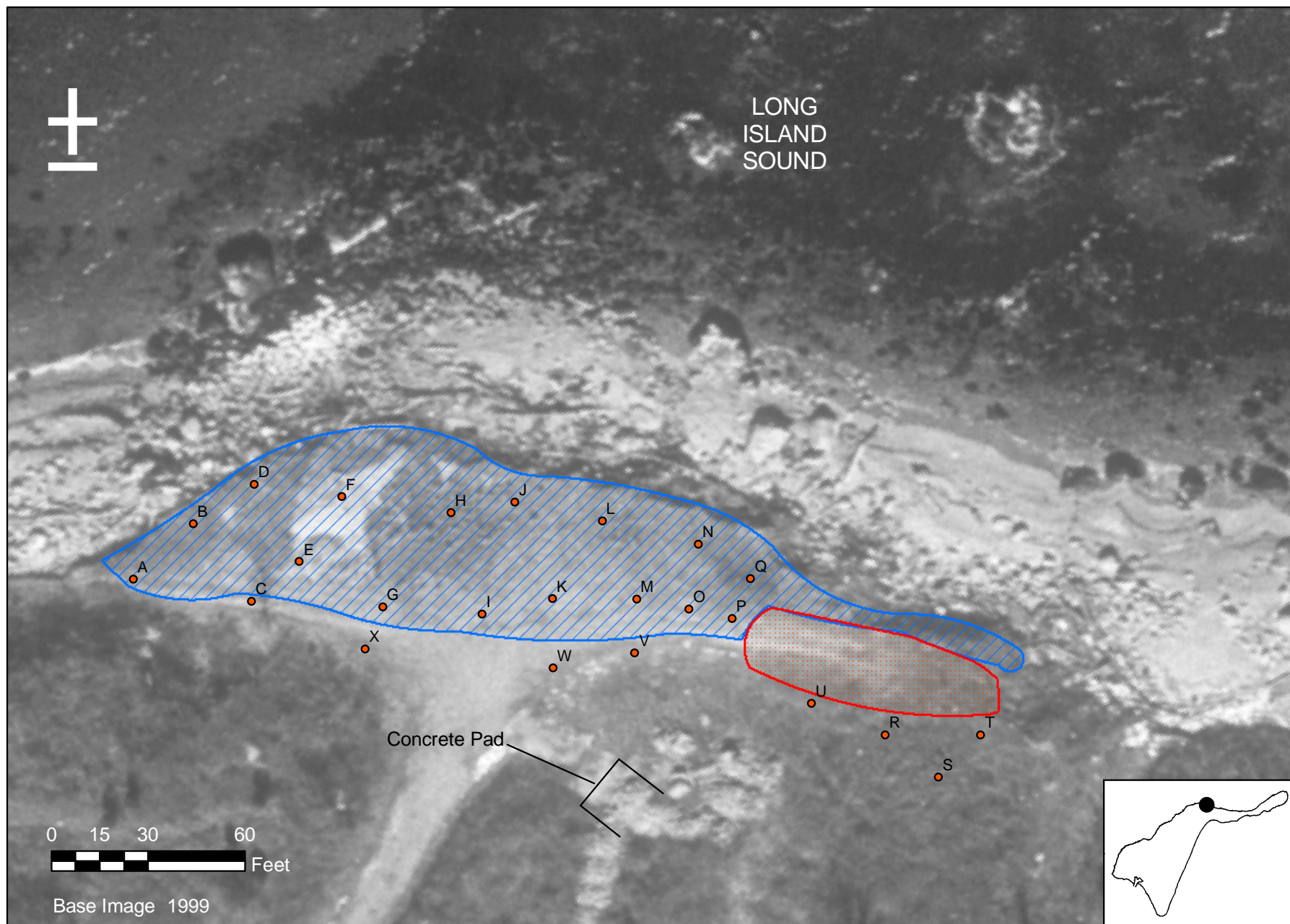
### 3.1 Drum Carcass Removal Action

The process of investigating the spatial extent of the drum carcasses and facilitating their removal was not completed during a single field action. This was largely due to priorities placed on a much larger excavation and removal action (the Investigation-by-Excavation [IBE] Project) that was also being undertaken on Plum Island. As time and resources permitted, *ad hoc* removal activities at the drum dump were implemented. The events surrounding this phased inspection/removal action are presented in a “time line” fashion below.

**October 2005** - Exploratory and removal operations were initiated by Entech on October 17, 2005. The first action taken was to delineate the spatial extent of the drum deposit. Entech quickly determined that the deposit (“dump”) measured approximately 30 feet wide and 100 feet long. In most instances the drums were found just beneath the soil surface; however, carcasses were occasionally detected up to 6 feet below ground surface (bgs). The position of this dump relative to the footprint of WMA 15 is portrayed in Figure 4.

During the initial delineation of the drum dump, a small number of carcasses were exposed and found to contain residual contents. This content material had a highly viscous, tar-like (petroleum) consistency that was jet black in color. No distinct odor or evidence of volatile emissions were noted in Photoionization Detector (PID) readings. A sample of the material was collected for further chemical analysis; the finding of this Toxicity Characteristic Leaching Procedure (TCLP) sample are discussed in Section 4 of this Report. Evidence of similar black, “tarry” deposits were also observed on some shoreline rocks immediately north of the drum dump. These deposits, which had solidified as a result of years of exposure to the elements, may have resulted from past releases of petroleum-based materials from the drums present within the dump.

Actual drum carcass excavation operations began in earnest on the morning of October 20, 2005. As the carcasses were removed, they were accumulated on a concrete pad located near the access road that serves this site. The pad, which is identified in Figure 4, was covered with a heavy plastic tarp to prevent any potential releases to the surrounding environment. Evidence of the tarry, residual materials previously contained by the drums were noted on many of the exhumed carcasses. Excavation operations continued until mid-morning when a drum full of a heavy, oily substance was unexpectedly encountered. The tines of the backhoe bucket used to remove the drum carcasses punctured the drum wall, causing most of its contents (approximately 30 to 40 gallons) to be released to the surrounding soil. Until this time, all of the drums encountered and removed had been crushed or were partially intact, empty hulks that occasionally contained small quantities of tarry residues. All of the drums encountered to this point were also significantly deteriorated due to their long-time contact with the elements. The full drum breached by the backhoe, however, was completely intact.



**Figure 4:**  
**Plum Island Animal Disease Center**  
**WMA 15 Site Diagram (2005-06)**

**Legend**

- October 2005 Test Pits
- Drum Disposal Area
- Area Containing Subsurface Debris/Waste



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Unlike the tarry materials previously encountered, the content of this intact drum was a very fluid, dark, free-flowing material. A petroleum smell was evident in the air soon after the incident and a PID reading taken immediately after the release returned readings ranging from 8 to 72 ppm for non-specific volatile compound emissions. The incident was reported to the facility's emergency response personnel and a containment/clean-up initiative was begun immediately. Photographs of the incident were taken; several representative images documenting this release have been included in Appendix A.

Securing and cleaning up the release required most of the day to complete. The clean-up generated four (4) recovery drums of oil contaminated wastes. These wastes were primarily comprised of oil contaminated soil, the carcass and residual contents of the breached drum itself, and miscellaneous personal protective equipment (PPE) and clean-up supplies. The drums were later removed from the site and staged in Building 67 for subsequent pick-up and disposal. The other previously exhumed carcasses collected during the day (87 individual carcasses in all) were secured on the plastic-covered pad discussed above.

No further removal actions at WMA 15 were conducted after the encounter with the full drum. Further planning for encounters with potentially full drums needed to be considered before removal operations could proceed.

**February 2006** - Arrangements for the removal of the 87 drum carcasses exhumed in October 2005 were made with Clean Venture/Cycle Chem, a licensed waste transport and disposal firm. On February 9<sup>th</sup>, a single roll off truck and empty 30-cubic yard box were dispatched to PIADC to transport the carcasses to the Cycle Chem facility in Elizabeth, New Jersey. The carcasses were placed in the plastic-lined roll off box by a backhoe, completely filling the box. A copy of the Bill of Lading for this non-hazardous debris is provided in Appendix B.

**July 2006** - Entech returned to WMA 15 prepared to address the remaining drum carcasses. Several overpack (salvage) drums, spill wipes/absorbent, and bolts of plastic sheeting for use in capturing and containing potential oily drums were stockpiled on-site to immediately address any problematic carcasses that might be encountered. Excavation work commenced on July 7<sup>th</sup> and was completed the following day. In all, approximately 250 additional drum carcasses were removed from the drum dump. Some of these carcasses and associated drum lids and hoops exhibited no evidence of residual oil. These "clean" carcasses and associated metal items were placed in a pile for subsequent metal recycling. Some of this clean drum debris was added directly to a 30 cubic-yard roll-off already staged on-site for the recovery of scrap metal deposits from the sea-side bluff of the landfill. The carcasses were added to this box to fully utilize its capacity. A second roll off was delivered to the site a few days later to contain the rest of this scrap metal. All scrap metal drum carcasses were removed from Plum Island by Mattituck Sanitation, a

local solid waste hauler. The roll off boxes laden with scrap were taken either of two local Long Island recycling facilities (P K Metals of Coram, NY or Gershow Recycling of Medford, NY) for metals recovery.

The remaining drums and associated debris noticeably contaminated by petroleum residues were stockpiled on the plastic-lined concrete pad previously used for such purposes in October 2005. These drums remained stockpiled until August when a spare Clean Venture/Cycle Chem roll off box from the ongoing IBE Project became available to transport these wastes. The contaminated drum carcasses were monitored periodically to ensure that petroleum residues did not migrate from the plastic-covered pad to the surrounding soil or the underlying pad.

In addition to the recovered drum carcasses discussed above, four (4) salvage drums containing partially oil-filled drum bodies and/or contaminated soil and clean-up materials were generated by the end of the July removal action. One drum body recovered from the dump was determined to contain #6 oil (fuel oil); a second drum held spent motor oil. The "motor oil" drum was observed to have legible print on one side. The green and white lettering and symbols on that drum identified it as having once contained a DOW Chemical product. Specifically, the signage referred to the contents as "DOW inhibited 1,1,1, Trichloroethane". Elsewhere on the body of the drum the partial wording "chloroeth..." was observed. A photograph of this drum and its signage is provided in Appendix A. Given the clearly oil-based content of this drum, the lack of a solvent smell, and negative readings from the PID, it was determined that the drum had been re-used as a convenient container for the oily wastes generated elsewhere on the island.

The four (4) drums of recovered oily wastes/soil media were removed from WMA 15 and taken to a temporary waste stockpile site at the Sand Pit (WMA-9). These drums were later disposed by PIADC's Operations and Maintenance (O&M) contractor during a periodic removal of the facility's other spent chemical and oil waste inventories.

**August 2006** - A second Clean Venture/Cycle Chem roll off box originally intended for use in the IBE Project - the IBE Project was being conducted concurrently with this removal - was utilized to remove the contaminated carcasses. The carcasses were removed from the plastic covered concrete pad and placed in a lined 25-cubic yard roll off box. The roll off box was subsequently removed from Plum Island on August 9<sup>th</sup>, 2006 and taken to the Cycle Chem facility in Elizabeth New Jersey for disposal. A copy of the Bill of Lading for this non-hazardous load of waste is found in Appendix B.

### **3.2 Supplemental Site Characterization Test Pitting Activities**

Regulatory representatives at the 2001 "Next Steps" meeting directed PIADC to develop at least one (1) additional test pit (trench) in the vicinity of the central western portion of the site to better characterize the

nature and extent of subsurface debris in that area. Instead of a single trench, Entech decided to create a number of individual test pits over the entire surface of the western and central portions of the WMA 15 footprint. This investigatory methodology was thought to provide a better measure of the landfill's content and spatial organization than a single test trench through a localized portion of the WMA.

Test pitting activities were initiated on October 17, 2005 and completed the following day. In all, 24 individual test pits were excavated within the footprint of the WMA. The pits were assigned alphabetic identifiers and their contents were described in a field notebook maintained by the investigatory staff. Each of the pits was created using a backhoe bucket and were dug to an average depth of three (3) to four (4) feet bgs. The horizontal dimensions of pits measured approximately two (2) feet wide and six (6) feet long. Figure 4 provides a spatial presentation of the pit locations relative to the footprint of the site. Table 1 briefly describes the contents observed in the exhumed overburden or in the sidewalls of each pit. No removal activities were conducted in concert with this action. The purpose of the test pitting exercise was strictly to ascertain the subsurface contents of the landfill and to delineate, if possible, the horizontal and vertical extent of any wastes contained therein. Representative photographs documenting this action are provided in Appendix A.

Given the observational results of this action, Entech concluded that subsurface waste deposition within WMA 15 was largely confined to the northern half of the site. The deposits appeared to taper, gradually thickening as they were deposited northward towards the coast. The area impacted by this past disposal activity is "sandwiched" between the coastal bluff and the intra-site roadway historically associated with the landfill. The spatial limits of this deposit are generally delineated on Figure 4.

### **3.3 Surface Scrap Metal and Debris Removal Action**

The recovery and removal of scrap metal and general debris from the bluff of WMA 15 began in May 2006. Like the drum carcass removal activities that occurred during 2006, the removal of this surface debris was conducted on an *ad hoc* basis. The removal action was used to supplement operational activities associated with the on-going IBE Project. Attention was turned to the recovery of scrap metal (and drum carcasses) when poor weather or malfunctioning equipment associated with the IBE Project occurred. Several photographs documenting the metal recovery process have been included in Appendix A.

Over the course of this removal action, approximately 20 to 30 tons of iron/steel debris were collected from the site. Most of the larger metallic items appeared to have come from several military fortifications and/or supporting military structures that predated PIADC's development. These items include large steel beams and pipe/pipe fittings, hot water radiators, metal plates, gears, fencing materials, and other miscellaneous heavy equipment/industrial items. One unusual type of material recovered from the

**Table 1 - Summary of WMA 15 Test Pit Findings**

<b>Pit Identifier</b>	<b>Description of Contents</b>
A	Mostly clean soil. Small amounts of scrap metal (sheet metal) observed.
B	Mostly clean soil. Length of pipe extending from west end of excavation noted.
C	Mostly clean soil. Small scraps of metal found in exhumed overburden.
D	Scrap metal and brick rubble observed.
E	Clean soil. No visual evidence of waste disposal noted.
F	Metal, brick, and other waste materials observed. Band of dark material (cinders and/or ash) also noted at 2 feet bgs.
G	Brick rubble and some scrap metal observed.
H	Brick rubble observed. Band of dark material (cinders and/or ash) also noted at 2 feet bgs.
I	Brick rubble observed. Band of dark material (cinders and/or ash) also noted at 2 feet bgs.
J	Concrete, brick, metal, and soda bottles observed. Band of dark material (cinders and/or ash) also noted at 2.5 feet bgs.
K	Brick, metal, bottles, and animal bones observed. Ash band noted at 1.5 feet bgs.
L	Minor debris noted in overburden. Ash band observed at 3 feet bgs.
M	Minor debris noted in overburden. Band of dark material (cinders and/or ash) also noted at 1.5 feet bgs.
N	Metal and glass debris observed. Band of dark material (cinders and/or ash) also noted at 3 feet bgs.
O	No debris observed. Band of dark material (cinders and/or ash) noted at approx. 4 feet bgs.
P	Band of dark material (cinders and/or ash) noted at 1.5 feet bgs.
Q	Miscellaneous debris items observed. Band of dark material (cinders and/or ash) also noted at approx. 4 feet bgs.
R	Clean soil; no evidence of debris.
S	Clean soil; no evidence of debris.
T	Clean soil; no evidence of debris.
U	No obvious debris, however, bits of asphalt noted. (From deteriorated pavement ?)
V	No obvious debris, however, bits of asphalt noted. (From deteriorated pavement ?)
W	No obvious debris, however, bits of asphalt noted. (From deteriorated pavement ?)
X	No obvious debris, however, bits of asphalt noted. (From deteriorated pavement ?)

eastern portions of the site was heavy gauge wire/cable. This wire, which was roughly the diameter of a heavy gauge pencil, was found co-mingled with the drum carcasses. The original source and/or age of this material was unclear, but its presence among the drum carcasses, and the fact it was buried, seemed to suggest it was placed at WMA 15 by USDA-ARS. An example of the volume of the wire recovered from

the site is provided in a photograph that has been included in Appendix A.

In addition to the large, heavy metallic items recovered, a plethora of smaller metal objects were collected from in and around the site. Lengths of small diameter pipe, tools, metal rods, bits of heavy iron, wire, and other object too numerous to catalogue were hand picked from the site and placed into roll off containers. These materials were largely uncovered by the removal/partial excavation of the heavier metallic items from the bluff of the landfill. Many small items were also collected from the adjacent beach and tidal zone.

All metal debris collected from WMA 15 was sent to either P K Metals of Coram, New York or Gershow Recycling of Medford New York for recycling. These loads of metal were co-mingled/supplemented with metal wastes recovered during the IBE project mentioned above and/or clean drum carcasses. The scrap value of the metals recycled from WMA 15 (and the larger IBE Project) were used to defray general transportation costs associated with the removal of recyclable materials from Plum Island.

Non-metallic debris recovered from WMA 15 represented only a small fraction of the waste materials recovered from this site. These wastes included discarded vehicle tires, lead-acid batteries, and miscellaneous wood and plastic items. Some of this debris clearly originated from off-island sources carried by the sea to the shores of Plum Island. Most of this material was disposed with PIADC's existing general refuse stream. Other "special waste" items like the tires and batteries that could not be readily disposed were placed with similar spent products generated by the island's O&M contractor.

## **4. WASTE AND SOIL MEDIA SAMPLING**

While most of the activities conducted at WMA 15 were simple visual investigatory or removal/recovery actions that did not require analytical characterization data to implement, limited sampling was necessary to properly assess the nature of the oily wastes associated with the drum carcasses. Additionally, potential impacts associated with releases of petroleum wastes from these carcasses to the surrounding environmental media (soil) were also required to evaluate site conditions. Details regarding these sampling activities are presented in the subsections below.

### **4.1 Drum Carcass Residue**

A representative sample of the tarry, petroleum-based substance first encountered in October 2005 was collected and evaluated for several analytical parameters. The sample was subjected to full TCLP analysis as well as the RCRA characteristics of ignitability, corrosivity, and reactivity. Additionally, the sample was also evaluated for the presence of polychlorinated biphenyls (PCBs). This broad spectrum of analyses was necessary to fully characterize the contaminated carcasses for acceptance and disposal criteria.



The TCLP analytical results indicated no exceedances of RCRA hazardous concentration limits (threshold limits) for the tarry substance. In most instances, the specific parameters evaluated were documented as non-detect ("U" qualified); however, three RCRA metal target analytes were observed above the Method Detection Limit (MDL). The concentration of these metals (barium, chromium, and lead) were all cited as estimated ("B" qualified) values. In each case, these metals values were two to three orders of magnitude below RCRA characteristic threshold limits. Non-TCLP analyses of the sample also yielded negative findings. Reactivity, ignitability, and PCB results were all qualified as non-detect, while the pH of the substance (corrosivity measure) was documented at 3.76. This pH value of the extract of the tarry substance, albeit acidic, did not exceed the acid corrosivity threshold for a RCRA regulated waste. The carcasses were profiled as non-RCRA chemical process solids and disposed. Copies of the original analytical results for this waste stream are presented in Appendix C.

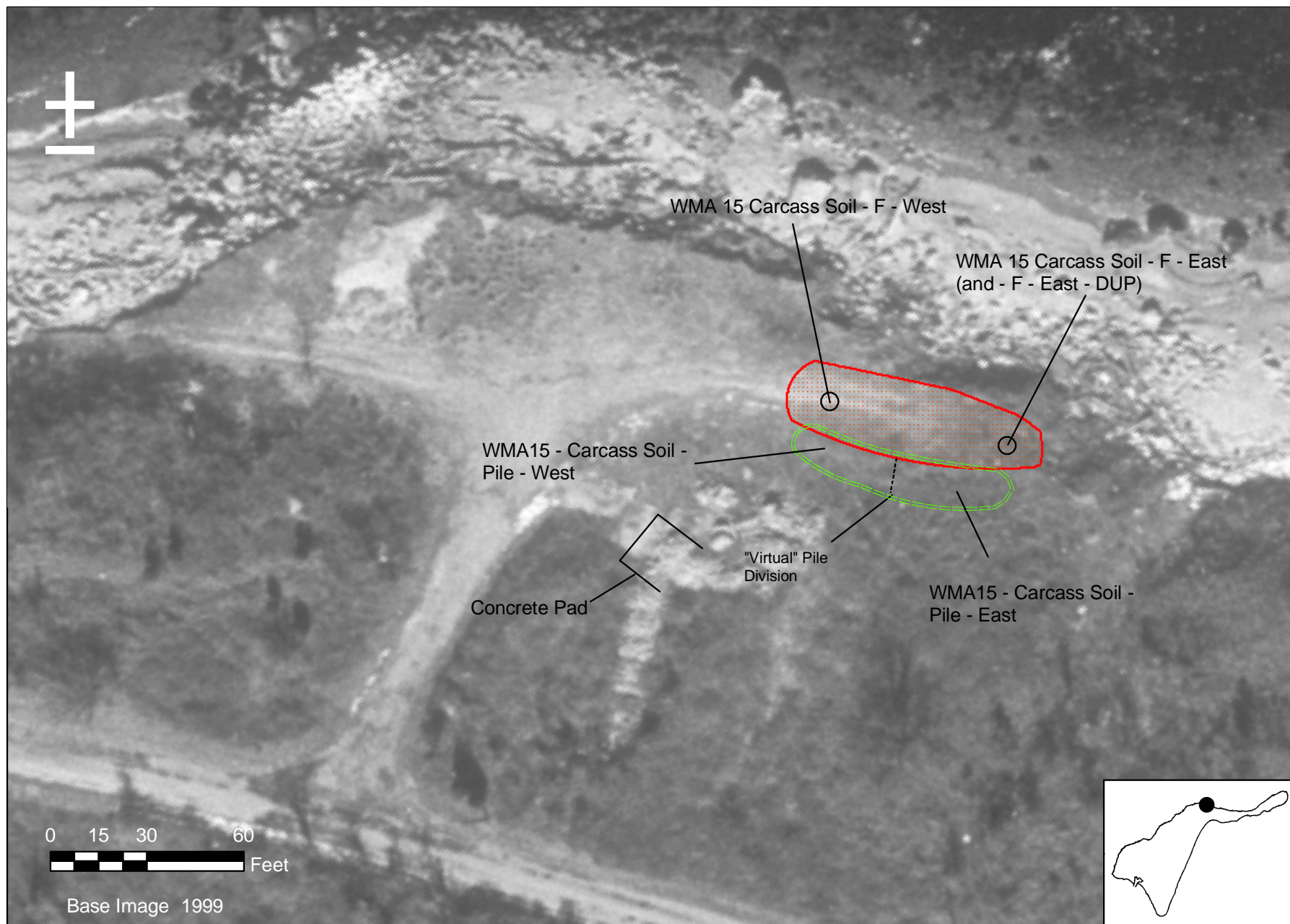
#### **4.2 Soil Sampling at the Drum Carcass Burial Site**

At the request of PIADC's Environmental Protection Specialist, four (4) post removal soil samples were collected from in and around the drum dump excavation to determine if residual petroleum contaminants might be present in the soil. Two distinct types of samples were collected from the area's sandy soil. These samples, which were collected on August 7<sup>th</sup>, 2006, are briefly described below.

Two grab samples from the floor of the excavation were collected at points below that of the original drum burial "horizon". These subsurface samples were collected to determine if contaminants had passed downward through the soil matrix over time. These sample points were developed by excavating two shallow pits along the central east-west axis of the excavation. One sample was used to represent the eastern half of the excavation while the other reflected conditions in the western portion of the excavation.



The grab samples were collected from the sidewalls of the pits at points that were clearly below the overlying, disturbed earthen strata. These samples were evaluated for Target Compound List (TCL) semi-volatile organic compounds (SVOCs), organochlorine (OC) pesticides, PCBs, and Target Analyte List (TAL) metals. Figure 5 presents the locations of these sample points.

Supplementing the two grab samples described above, were two composite soil samples. These samples were collected from the soil that had been excavated with (in contact with) the drum carcasses. This overburden soil had been stockpiled in a single, narrow pile along the southern flank of the burial site excavation. In an effort to roughly mirror the spatial sampling strategy of the subsurface soils, the pile was "virtually" sub-divided into eastern and western halves. One composite sample from each half was then collected. The two composite samples were evaluated for the same constituents as the grab samples



**Figure 5:**  
 Plum Island Animal Disease Center  
 WMA 15 Drum Dump Sample  
 Locations

**Legend**

-  Overburden Pile
-  Drum Disposal Area



BMT Entech, Inc.  
 13755 Sunrise Valley Drive  
 Suite 320  
 Herndon, VA 20171

The analytical results of this round of sampling revealed a number of target analyte detections among the organic and inorganic data. Some exceedances of NYSDEC's Technical and Administrative Guidance Memorandum #4046 (TAGM) recommended soil clean-up values were also observed. These include exceedances for a small number of semi-volatile organics, OC pesticides, and heavy metals. No PCBs were detected in any of the four (4) individual samples. Additionally, the data shows that contamination was much more prevalent in the eastern rather than the western samples.

The table (Table A) provided in Appendix D provides a summary overview of the specific analytical results for each sample. This table also contains a frequency of detection column to give the reader a better understanding of contaminant trends noted among the data. Copies of the original laboratory data results (Form 1s) are presented, by site, in Appendix E. A brief narrative summary of the findings for each sample is provided below.

#### Sample WMA15-Carcass Soil-F-East (and East-Dup)

This sub-surface floor (F) grab sample (and its duplicate) yielded data showing several polynuclear aromatic hydrocarbon (PAH) and pesticide detections. Six (6) PAHs and the OC pesticides lindane, dieldrin, and DDT and its metabolites DDE and DDD (hereinafter collectively referred to as DDX pesticides) exceeded TAGM clean-up value recommendations. The specific organic analytes and their maximum exceedance values - the largest concentration value cited either in the original sample or the duplicate - are presented in Table 2 below.

The presence of PAHs (and other SVOCs) in the sample (and other WMA 15 samples) was not unexpected given the historical nature of the site and its waste contents. Pesticide detections and exceedances were also less surprising than otherwise might be expected. Entech has observed pesticide residues at many different sites on Plum Island where their presence would have seemed highly unlikely. It has been postulated that pesticide residues of now-banned pesticides (and their degradation by-products) may represent the past use of broad spray/application practices by USDA-ARS and the U.S. Army. It is thought that such broad applications of pesticides may have been intended to control any number of insect pests that historically (and currently) existed on the island.

Elemental metals (inorganics) were also broadly detected above analytical method detection limits in both samples; however, only a handful exceeded TAGM benchmark values. In some instances, the exceedances (and detections) observed can be largely attributed to the natural marine environment (e.g., calcium, sodium, potassium) and native metal content of the soil. In nearly all instances, the individual TAGM values are based on actual site background numbers. These values were generated for both surface and subsurface soils during an island-wide background study conducted in 1999 to support

**Table 2 - Organic TAGM Exceedances for Sample WMA15-Carcass Soil-F-East (and Duplicate)**

Target Analyte	Analyte Type	TAGM Value (ppb)	Maximum Concentration (ppb)
Benzo(a)anthracene	SVOC (PAH)	224	1800
Chrysene	SVOC (PAH)	400	1800
Benzo(b)fluoranthene	SVOC (PAH)	1100	2800
Benzo(k)fluoranthene	SVOC (PAH)	1100	1100
Benzo(a)pyrene	SVOC (PAH)	61	1700
Dibenzo(a,h)anthracene	SVOC (PAH)	14	220
Gamma-BHC (Lindane)	OC Pest	60	780
Dieldrin	OC Pest	44	170
DDT	OC Pest	2100	7000
DDE	OC Pest	2100	5100

PIADC's RCRA and CERCLA Program investigations. Due to the sub-surface nature of the sample, the sub-surface background values for metals have been compared against the analytical results. The inorganic exceedances associated with this specific grab sample (and its duplicate) are portrayed in Table 3 below.

**Table 3 - Inorganic TAGM Exceedances for Sample WMA15-Carcass Soil-F-East (and Duplicate)**

Target Analyte	Analyte Type	TAGM Subsurface Value (ppm)	Maximum Concentration (ppm)
Barium	TAL Metal	31.8	40
Calcium	TAL Metal	299	3400
Copper	PP Metal	10.9	31
Iron	TAL Metal	9830	14000
Lead	PP Metal	7.8	160
Magnesium	TAL Metal	2150	2400
Zinc	PP Metal	25.6	120

TAL = Target Analyte List  
PP = Priority Pollutant

#### Sample WMA15-Carcass Soil-F-West

Unlike the eastern floor sample results presented above, no organic analyte exceedances were identified in the western grab sample. With regard to SVOCs, most if not all of the PAHs noted in the eastern sample were detected in the western sample; however, none were present at concentrations above the

Reporting Limit. As a result, all of the detections are cited as estimated (J qualified) values; no definitive concentration exceedances (“hits”) were documented.

Inorganic (metals) results were more similar to the eastern sample’s results; however, although many individual analytes were detected, only three (3) exceeded site background TAGM values. These exceedances, as seen in Table 4 below, were roughly the same order of magnitude in comparison with their TAGM (site background) threshold values and likely reflect the natural variability of native metals concentrations on the island.

**Table 4 - Inorganic TAGM Exceedances for Sample WMA15-Carcass Soil-F-West**

Target Analyte	Analyte Type	TAGM Subsurface Value (ppm)	Concentration (ppm)
Barium	TAL Metal	31.8	34
Lead	PP Metal	7.8	17
Zinc	PP Metal	25.6	48

TAL = Target Analyte List  
PP = Priority Pollutant

#### Sample WMA15-Carcass Soil-Pile-East

This soil pile (Pile) composite sample yielded data showing several PAH and DDX pesticide detections. Only three (3) PAHs, all “J” (estimate) qualified, and the pesticide 4,4'-DDT exceeded TAGM clean-up value recommendations. The specific organic analytes and their exceedance values are presented in Table 5 below.

**Table 5 - Organic TAGM Exceedances for Sample WMA15-Carcass Soil-Pile-East**

Target Analyte	Analyte Type	TAGM Value (ppb)	Concentration (ppb)
Benzo(a)anthracene	SVOC (PAH)	224	330 (J qual.)
Benzo(a)pyrene	SVOC (PAH)	61	330 (J qual.)
Dibenzo(a,h)anthracene	SVOC (PAH)	14	61 (J qual.)
DDT	OC Pest	2100	4800

Metals detections and exceedances were more numerous than observed in the excavation’s subsurface floor samples. Eleven (11) of the 18 inorganics detected exceeded TAGM (site background) clean-up recommendations. Exceedances of calcium and sodium threshold limits were not viewed as significant



due to the setting of the site and the nature of the sample material being evaluated. A summary of the exceedances observed in the sample data is presented in Table 6 below.

**Table 6 - Inorganic TAGM Exceedances for Sample WMA15-Carcass Soil-Pile-East**

Target Analyte	Analyte Type	TAGM Subsurface Value (ppm)	Concentration (ppm)
Barium	TAL Metal	31.8	96
Calcium	TAL Metal	299	14000
Chromium	PP Metal	12.8	13
Copper	PP Metal	10.9	19
Iron	TAL Metal	9830	11000
Lead	PP Metal	7.8	80
Magnesium	TAL Metal	2150	3000
Sodium	TAL Metal	66	170
Thallium	PP Metal	0.365	1.1
Vanadium	TAL Metal	22.2	25
Zinc	PP Metal	25.6	100

TAL = Target Analyte List  
PP = Priority Pollutant

#### Sample WMA15-Carcass Soil-Pile-West

Like its sub-surface floor counterpart, the western pile composite sample yielded no exceedances for organic parameters. Additionally, virtually all target analytes were “U” qualified (non-detect). An estimated concentration for pentachlorophenol and two (2) extremely low DDX results were the only contaminants observed in the sample.

Similarly, only two (2) low-level exceedances were observed among the 15 metallic elements detected in the soil pile sample. The analytes exceeding the site background TAGM clean-up thresholds are presented in Table 7.

**Table 7 - Inorganic TAGM Exceedances for Sample WMA15-Carcass Soil-Pile-West**

Target Analyte	Analyte Type	TAGM Subsurface Value (ppm)	Concentration (ppm)
Lead	PP Metal	7.8	19
Zinc	PP Metal	25.6	140

PP = Priority Pollutant

## 5. SITE RESTORATION

The stockpiled overburden from the drum carcass removal action was returned to the excavation site on May 1<sup>st</sup>, 2007. Similarly, grading and compacting of the seaward bluff along which much of the scrap metal had previously been removed was also undertaken at that time. These actions were conducted to secure the site until such time as a decision to cap or excavate and remove contaminated soils and residual debris present within this former disposal site is resolved. A representative photograph of the post-restoration phase of this project activity is provided in Appendix A..

Based on prior experience, no effort to artificially establish vegetative cover atop these disturbed areas were initiated. The introduction of non-native grass seed to this sandy, coastal environment has been found to be largely unsuccessful without extensive maintenance. Instead, Entech has observed that the natural restorative properties of native grasses and ground cover shrubs quickly establish themselves in these coastal environments and adequately protect disturbed areas from the threat of destabilization and erosion. Subsequent inspections of these areas have shown that native cover is returning and no significant soil erosion effects have been encountered.

## 6. CONCLUSIONS AND RECOMMENDATIONS

Each of the three (3) primary removal and investigation tasks undertaken at WMA 15 were successfully concluded by the end of August 2006. The removal of scrap metal and debris deposits that had long been a fixture of this WMA was completed to the extent practical. Debris items were appropriately disposed while metal wastes were beneficially recycled. Proceeds from the sale of the metal were used as credits by the transport subcontractor to defray the cost of shipment and recycling of this material. Completion of this task fulfills DHS's desire to see the aesthetics of WMA 15 improved from its former condition.

The delineation and removal of the contaminated drum carcasses in the eastern portion of the site was, with the exception of the one, unexpected release event, completed without incident or complications. In all, over 300 drum carcasses and associated metal items (e.g. lids, hoops) were recovered and either disposed or recycled for their metal content. The successful completion of this removal action satisfies the first requirement set forth by both NYSDEC and SCDHS in 2001 for further investigation of the spatial extent of the drum dump as well as the recovery of all drum remains contained therein.

In addition to the drum removal efforts, the regulatory community's request for further site characterization work was also successfully completed. Sub-surface deposits within the central and western portions of the landfill were thoroughly evaluated and documented. The content and spatial extent of waste deposits are now more clearly defined. Completion of this action satisfies the second 2001 requirement the State

and County directed PIADC to perform. This information should be useful to DHS in deliberating whether an additional removal action is necessary to address the shallow, residual solid waste deposits observed.

Finally, consideration of the analytical findings associated with the drum carcass soils data presented in Section 4 of this report is necessary. Although there is little question that oily wastes associated with the buried drums were released to surrounding soils, analytical findings similar to, if not more highly concentrated than those obtained in August 2006, were not considered compelling enough by regulatory authorities in 2001 to require a soil removal action. Formal meeting notes taken during the "Next Steps" meeting with NYSDEC and SCDHS document this position. None of the assembled regulatory representatives felt that the numerous exceedances for both organic and inorganic constituents presented in the 1999 data were at concentrations that warranted further consideration. These analytical results are presented in the section devoted to WMA 15 in the CERCLA Program Report ( a copy of the 1999 data results exceedance maps ["Tag Maps"] and pertinent excerpts from the meeting notes are provided for the reader's convenience in Appendix F).

Given the regulator's apparent acceptance of the 1999 analytical results and the general parity of that data to the recent 2006 analytical results, it would appear that a subsequent soil removal action would not be necessary. Restoration of the site to its largely original contour and appearance ensures that the site will remain stable and secure for the foreseeable future.

Separately, placement of a protective cap atop this WMA should be considered. The construction of a cap was originally recommended in the CERCLA Program Report. This recommendation garnered some interest among the regulators in 2001, but no determination as to its true need or viability was reached by the meeting stakeholders. Given the exposed location of this shoreline site and the removal of most of the landfill's contents, it would be prudent to first conduct a cost/benefit analysis for such an action. It is likely that a further removal of debris (and contaminated soil) might be less costly than engineering and constructing a cap atop WMA 15.

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## **APPENDIX A**

### PROJECT PHOTOGRAPHS



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PHOTO LOG – WMA 15



**Figure 1 – Initial excavation of drum carcasses from the eastern portion of WMA 15.**



**Figure 2 – Typical view of drum carcasses removed from the drum dump at WMA 15.**



PHOTO LOG – WMA 15



**Figure 3 – Typical view of buried drum carcasses in the drum dump at WMA 15.**



**Figure 4 - View of heavy oil (No. 6 fuel oil) released from buried drum encountered during drum carcass removal operations in October 2005.**



PHOTO LOG – WMA 15



**Figure 5 – Post-release exposure of fuel oil filled drum encountered in October 2005.**



**Figure 6 – Post removal view of the fuel oil drum release site. Note partially exposed drum carcasses immediately to the right and left of the excavation.**



PHOTO LOG – WMA 15



Figure 7 – Drum label on exhumed carcass. This drum contained spent motor oil.



Figure 8 - Spent motor oil drum and contaminated soil placed in an overpack drum.



PHOTO LOG – WMA 15



**Figure 9 – Full-scale exhumation of the drum dump at WMA 15. Over 300 drum carcasses were ultimately removed from the eastern portion of this landfill.**



**Figure 10 – “Clean” (oil free) drum carcasses readied for shipping via roll off box to a local metals recycling facility on Long Island.**



PHOTO LOG – WMA 15



**Figure 11 – Recovering scrap metal from the landfill bluff at WMA 15. This metal was later transported to a local Long Island metals recycling center.**



**Figure 12 – Stockpiled scrap metal recovered from WMA 15 awaiting transport to an off-island recycling center.**



PHOTO LOG – WMA 15



**Figure 13 - Unsorted scrap metal and debris from the bluff and shoreline of WMA 15.**



**Figure 14 - Example of debris items removed with scrap metal deposits from WMA 15.**



PHOTO LOG – WMA 15



**Figure 15 – Test pitting action to characterize the nature and extent of landfill deposits in the central and western portions of WMA 15.**



**Figure 16 - Typical view of test pits in the western portion of WMA 15.**



PHOTO LOG – WMA 15



**Figure 17 - View of some of the scrap wire exhumed with drum carcasses from the eastern portion of WMA 15.**

PHOTO LOG – WMA 15



**Figure 18 - Post-restoration view of the eastern half of WMA-15. The barren soil in the mid-frame portion of the image marks the site of the former drum carcass burial ground. Native vegetation cover is quickly establishing itself over this scarred area (June 2007).**

## **APPENDIX B**

BILLS OF LADING FOR WMA 15  
DRUM CARCASSES

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# CVC CleanVenture/CycleChem

9083550965 P.03.05

CVCC-075628

NON-HAZARDOUS SOLID WASTE

The Environmental Services Source

## BILL OF LADING

Generator's Name and Mailing Address

PLUM ISLAND ANIMAL DISEASE CTR  
631 323-3045 RT 25  
ORIENT POINT, NY 11951

BOL 10075628

Generator's Phone

SAME

Transporter 1 Company Name

CLEAN VENTURE INC.

State Trans. ID-NJDEPE

Decal No.

Transporter's Phone

State Trans. ID-NJDEPE

Decal No.

Transporter's Phone

Facility's Phone

Transporter 2 Company Name

Designated Facility Name and Site Address

10.

US EPA ID Number

Cycle Chem Inc.  
217 S. 1ST STREET  
ELIZABETH, NJ 07206

NTD002200046

US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)

Containers  
No. Type

Total  
Quantity

Unit  
Wt/Vol

Waste No.

a. NON-RCRA NON-DOTS SOLIDS

XXI CM

EST. 5

TRCOT  
2127

J. Additional Descriptions for Materials Listed Above

a. SOIL 100% S  
b. 55-gal drums w/ some  
#6 oil residues

c.

d.

SO/

Cell Generator # and Product Codes:

A) REX-1000

JOB# 86894

-04-05 933527

DECAL # 1000

PC0124

Emergency # (908) 355-5800

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by USEPA & applicable state regulations

PLACARDS  
REQUIRED

NO

PLACARDS  
SUPPLIED

YES ☒ NO- FURNISHED BY CARRIER

Printed/Typed Name

Thomas Dwyer

Signature

Thomas Dwyer

Month Day Year

02 29 2006

Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

KEVIN J. LINDEN

Signature

KEVIN J. LINDEN

Month Day Year

02 29 2006

Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest.

Printed/Typed Name

NELSON ELIAS

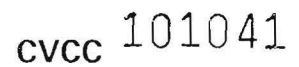
Signature

NELSON ELIAS

Month Day Year

02 29 2006

SIGNATURE AND INFORMATION MUST BE LEGIBLE ON ALL COPIES



## The Environmental Services Source

WD 6695E

## Page 1 of 1

# GENERATOR

CORV 4 WHITE GENERATOR

COPY 2 BULK TRANSPORTED

CORVUS BLUE CLOTH

ELIGIBLE ON ALL COPIES  
COPY & PASTE BY EASY COPY

## **APPENDIX C**

### **LABORATORY DATA RESULTS (FORM 1s) FOR DRUM CARCASS OILY WASTES**

**(OCTOBER 2005)**

- TCLP Volatiles (VOCs)
- TCLP Semi-volatiles (SVOCs)
- TCLP Organochlorine Pesticides (OC Pesticides)
- TCLP Metals
- Polychlorinated biphenyls (PCBs)
- RCRA Ignitability
- RCRA Corrosivity
- RCRA Reactivity

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# GC/MS Volatiles

## Method SW8260B--TCLP Leachate

### Sample Results

Lab Name: Paragon Analytics  
 Work Order Number: 0510226  
 Client Name: BMT-Entech, Inc.  
 ClientProject ID: PIADL CERCLA Program 0416

Field ID: WMA-15 DRUM TAR  
 Lab ID: 0510226-3

Sample Matrix: LEACHATE  
 % Moisture: N/A  
 Date Collected: 19-Oct-05  
 Date Extracted: 07-Nov-05  
 Date Analyzed: 07-Nov-05  
 Prep Method: SW5030C

Prep Batch: VL051107-4  
 QCBatchID: VL051107-4-1  
 Run ID: VL051107-4A  
 Cleanup: NONE  
 Basis: As Received

Sample Aliquot: 5 ml  
 Final Volume: 5 ml  
 Result Units: mg/l  
 Clean DF: 1  
 File Name: D12971

LEACH DATE: 11/1/2005

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
75-01-4	VINYL CHLORIDE	5	0.025	0.025	0.0059	U	
75-35-4	1,1-DICHLOROETHENE	5	0.025	0.025	0.0046	U	
78-93-3	2-BUTANONE	5	0.1	0.1	0.025	U	
67-66-3	CHLOROFORM	5	0.025	0.025	0.0036	U	
56-23-5	CARBON TETRACHLORIDE	5	0.025	0.025	0.0036	U	
107-06-2	1,2-DICHLOROETHANE	5	0.025	0.025	0.0038	U	
71-43-2	BENZENE	5	0.025	0.025	0.0032	U	
79-01-6	TRICHLOROETHENE	5	0.025	0.025	0.0032	U	
127-18-4	TETRACHLOROETHENE	5	0.025	0.025	0.0047	U	
108-90-7	CHLOROBENZENE	5	0.025	0.025	0.0025	U	

### Surrogate Recovery

U = ND

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	0.276		0.25	110	74 - 123
1868-53-7	DIBROMOFLUOROMETHANE	0.277		0.25	111	79 - 120
2037-26-5	TOLUENE-D8	0.274		0.25	110	83 - 120

Data Package ID: VL0510226-2

# GC/MS Semi-volatiles

## Method SW8270C--TCLP Leachate

### Sample Results

Lab Name: Paragon Analytics  
 Work Order Number: 0510226  
 Client Name: BMT-Entech, Inc.  
 Client Project ID: PIADL CERCLA Program 0416

<b>Field ID:</b> WMA-15 DRUM TAR <b>Lab ID:</b> 0510226-3 <b>LEACH DATE:</b> 10/31/2005	<b>Sample Matrix:</b> LEACHATE <b>% Moisture:</b> N/A <b>Date Collected:</b> 19-Oct-05 <b>Date Extracted:</b> 03-Nov-05 <b>Date Analyzed:</b> 15-Nov-05 <b>Prep Method:</b> SW3520C	<b>Prep Batch:</b> EX051103-7 <b>QC Batch ID:</b> EX051103-7-1 <b>Run ID:</b> SV051115-2 <b>Cleanup:</b> NONE <b>Basis:</b> As Received	<b>Sample Aliquot:</b> 100 ml <b>Final Volume:</b> 1 ml <b>Result Units:</b> mg/l <b>Clean DF:</b> 1 <b>File Name:</b> P3589
---	--	---	--

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
110-86-1	PYRIDINE	1	0.1	0.1	0.016	U	
106-46-7	1,4-DICHLOROBENZENE	1	0.1	0.1	0.0077	U	
95-48-7	2-METHYLPHENOL	1	0.1	0.1	0.0053	U	
108-39-4	3+4-METHYLPHENOL	1	0.1	0.1	0.0047	U	
67-72-1	HEXACHLOROETHANE	1	0.1	0.1	0.0072	U	
98-95-3	NITROBENZENE	1	0.1	0.1	0.007	U	
87-68-3	HEXACHLOROBUTADIENE	1	0.1	0.1	0.0065	U	
88-06-2	2,4,6-TRICHLOROPHENOL	1	0.1	0.1	0.0051	U	
95-95-4	2,4,5-TRICHLOROPHENOL	1	0.1	0.1	0.006	U	
121-14-2	2,4-DINITROTOLUENE	1	0.1	0.1	0.0086	U	
118-74-1	HEXACHLOROBENZENE	1	0.1	0.1	0.0068	U	
87-86-5	PENTACHLOROPHENOL	1	0.2	0.2	0.11	U	

### Surrogate Recovery

u = 100

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
118-79-6	2,4,6-TRIBROMOPHENOL	0.505		0.75	67	23 - 100
321-60-8	2-FLUOROBIPHENYL	0.359		0.5	72	21 - 106
367-12-4	2-FLUOROPHENOL	0.521		0.75	69	21 - 100
4165-60-0	NITROBENZENE-D5	0.433		0.5	87	34 - 111
4165-62-2	PHENOL-D5	0.547		0.75	73	15 - 104
1718-51-0	TERPHENYL-D14	0.443		0.5	89	33 - 111

Data Package ID: SV0510226-1

Date Printed: Tuesday, November 29, 2005

Paragon Analytics  
 LIMS Version: 5.270A

Page 1 of 1

# Organochlorine Pesticides

## Method SW8081A--TCLP Leachate

### Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0510226

Client Name: BMT-Entech, Inc.

ClientProject ID: PIADL CERCLA Program 0416

Field ID:	WMA-15 DRUM TAR
Lab ID:	0510226-3

LEACH DATE: 10/31/2005

Sample Matrix: LEACHATE

% Moisture: N/A

Date Collected: 19-Oct-05

Date Extracted: 02-Nov-05

Date Analyzed: 08-Nov-05

Prep Method: SW3520C

Prep Batch: EX051102-4

QCBatchID: EX051102-4-1

Run ID: PT051108-2

Cleanup: NONE

Basis: As Received

Sample Aliquot: 100 ml

Final Volume: 10 ml

Result Units: mg/l

Clean DF: 1

File Name: EB011835

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
58-89-9	GAMMA-BHC (LINDANE)	1	0.0005	0.0005	0.000051	U	
76-44-8	HEPTACHLOR	1	0.0005	0.0005	0.000049	U	
1024-57-3	HEPTACHLOR EPOXIDE	1	0.0005	0.0005	0.000045	U	
5103-74-2	GAMMA-CHLORDANE	1	0.0005	0.0005	0.000042	U	
5103-71-9	ALPHA-CHLORDANE	1	0.0005	0.0005	0.000052	U	
72-20-8	ENDRIN	1	0.0005	0.0005	0.000044	U	
72-43-5	METHOXYCHLOR	1	0.0025	0.0025	0.00015	U	
8001-35-2	TOXAPHENE	1	0.025	0.025	0.0042	U	
12789-03-6	CHLORDANE	1	0.01	0.01	0.00093	U	

### Surrogate Recovery

U = ND

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	0.00412		0.00502	82	20 - 110
877-09-8	TETRACHLORO-M-XYLENE	0.00457		0.00502	91	40 - 131

Data Package ID: PT0510226-1

Date Printed: Monday, November 21, 2005

Paragon Analytics

LIMS Version: 5.268A

Page 1 of 1

# TCLP ICP Metals

## Method SW6010B--TCLP Leachate Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0510226

Client Name: BMT-Entech, Inc.

ClientProject ID: PIADL CERCLA Program 0416

*NO EXCEEDANCES*

Field ID: WMA-15 DRUM TAR

Lab ID: 0510226-3

LEACH DATE: 10/31/2005

Sample Matrix: LEACHATE

% Moisture: N/A

Date Collected: 19-Oct-05

Date Extracted: 01-Nov-05

Date Analyzed: 02-Nov-05

Prep Method: SW3010A

Prep Batch: IP051101-3

QCBatchID: IP051101-3-1

Run ID: IT051102-1A5

Cleanup: NONE

Basis: As Received

Sample Aliquot: 5 g

Final Volume: 50 ml

Result Units: mg/l

Clean DF: 1

File Name: TS51102

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7440-38-2	ARSENIC	1	0.1	0.1	0.025	U	
7440-39-3	BARIUM	1	0.088	1	0.0018	B	E
7440-43-9	CADMIUM	1	0.05	0.05	0.0021	U	
7440-47-3	CHROMIUM	1	0.0059	0.1	0.0027	B	
7439-92-1	LEAD	1	0.028	0.03	0.012	B	
7782-49-2	SELENIUM	1	0.05	0.05	0.035	U	
7440-22-4	SILVER	1	0.1	0.1	0.0036	U	

*U = ND      B = EST VALUE = J*

# TCLP Mercury

## Method SW7470A--TCLP Leachate Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0510226

Client Name: BMT-Entech, Inc.

ClientProject ID: PIADL CERCLA Program 0416

Field ID: WMA-15 DRUM TAR

Lab ID: 0510226-3

LEACH DATE: 10/31/2005

Sample Matrix: LEACHATE

% Moisture: N/A

Date Collected: 19-Oct-05

Date Extracted: 02-Nov-05

Date Analyzed: 04-Nov-05

Prep Method: METHOD

Prep Batch: hg051102-2

QCBatchID: hg051102-2-1

Run ID: hg051104-1a5

Cleanup: NONE

Basis: As Received

Sample Aliquot: 20 g

Final Volume: 20 ml

Result Units: mg/l

Clean DF: 1

File Name: 05110400

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
7439-97-6	MERCURY	1	0.0002	0.0002	0.0000048	U	



# PCBs

Method SW8082

## Sample Results

Lab Name: Paragon Analytics

Work Order Number: 0510226

Client Name: BMT-Entech, Inc.

ClientProject ID: PIADL CERCLA Program 0416

Field ID: WMA-15 DRUM TAR

Lab ID: 0510226-1

Sample Matrix: SOLID

% Moisture: N/A

Date Collected: 19-Oct-05

Date Extracted: 30-Oct-05

Date Analyzed: 16-Nov-05

Prep Method: SW3540C

Prep Batch: EX051030-1

QCBatchID: EX051030-1-2

Run ID: PT051115-4A

Cleanup: SW3665

Basis: As Received

Sample Aliquot: 1.11 g

Final Volume: 10 ml

Result Units: UG/KG

Clean DF: 1

File Name: ED019576

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	MDL	Result Qualifier	EPA Qualifier
12674-11-2	AROCLOR-1016	3	2700	2700	220	U	
11104-28-2	AROCLOR-1221	3	5400	5400	190	U	
11141-16-5	AROCLOR-1232	3	2700	2700	250	U	
53469-21-9	AROCLOR-1242	3	2700	2700	110	U	
12672-29-6	AROCLOR-1248	3	2700	2700	220	U	
11097-69-1	AROCLOR-1254	3	2700	2700	240	U	
11096-82-5	AROCLOR-1260	3	2700	2700	320	U	

### Surrogate Recovery

U = ND

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
2051-24-3	DECACHLOROBIPHENYL	128	*	452	28	60 - 125
877-09-8	TETRACHLORO-M-XYLENE	454		452	100	70 - 125

Data Package ID: PT0510226-2

Date Printed: Tuesday, November 22, 2005

Paragon Analytics

LIMS Version: 5.269A

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**Steve Baker**

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**From:** "Lance Steere" <lsteere@paragonlabs.com>  
**To:** <sbaker@bmt-entech.com>  
**Sent:** Monday, November 07, 2005 11:55 AM  
**Subject:** PIADC Tar , match test

*Ignitability  
test*

Steve,

we tried the experiment this morning with your tar sample.

We held a lit wooden match against an ~0.25 gram portion of your tar for approximately 10 seconds.

It first melted, then spattered and smoked (very slightly). The odor was very similar to roofing tar. It never caught fire.

This is probably the most entertainment I'll get this Monday.

FYI....

Lance Steere, Project Manager  
Paragon Analytics, a division of Data Chem  
(970) 490-1511